Exhibit No.: _____

Issue(s):	Cost of Service
Witness/Type of Exhibit:	Hong Hu/Rebuttal
Sponsoring Party:	Public Counsel
Case No.:	ER-2001-299

REBUTTAL TESTIMONY

OF

HONG HU

Submitted on Behalf of the Office of the Public Counsel

The Empire District Electric Company

Case No. ER-2001-299

May 3, 2001

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the matter of The Empire District Electric Company's tariff sheets designed to implement a general rate increase for retail electric service provided to customers in the Missouri service area of the company.	)))))	Case No. ER-2001-299

AFFIDAVIT OF HONG HU

STATE OF MISSOURI)
) ss
COUNTY OF COLE)

Hong Hu, of lawful age and being first duly sworn, deposes and states:

1. My name is Hong Hu. I am a Public Utility Economist for the Office of the Public Counsel.

2. Attached hereto and made a part hereof for all purposes is my rebuttal testimony consisting of pages 1 through 6 and Schedule HH-REB-1.

3. I hereby swear and affirm that my statements contained in the attached testimony are true and correct to the best of my knowledge and belief.

Hu Hong
Hong Hu

Subscribed and sworn to me this 3rd day of May, 2001.

Bonnie S. Howard, Notary Public

My commission expires May 3, 2001.

REBUTTAL TESTIMONY

OF

HONG HU

EMPIRE DISTRICT ELECTRIC COMPANY

CASE NO. ER-2001-299

Q. PLEASE STATE YOUR NAME, TITLE, AND BUSINESS ADDRESS.

A. Hong Hu, Public Utility Economist, Office of the Public Counsel, P. O. Box 7800, Jefferson City, Missouri 65102.

Q. HAVE YOU TESTIFIED PREVIOUSLY IN THIS CASE?

A. Yes, I submitted direct testimony on the issue of cost of service and rate design.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The purpose of my rebuttal testimony is to present Public Counsel's updated class cost of service (CCOS) study results, and Public Counsel's response to the cost of services studies provided by Empire District Electric Company ("Empire" or "Company"), the Public Service Commission Staff (Staff) and the Special Contract Customer (Praxair).

Q. PLEASE DESCRIBE THE CHANGES IN YOUR CCOS STUDY.

A. The CCOS study was updated to incorporate the Staff's accounting data associated with true-up, and the Staff's adjusted billing determinants and revenues. The results of my revised CCOS study are shown in schedule HH REB-1. The overall results are essentially unchanged from the previously filed study.

I. CLASS COST OF SERVICE STUDY

Q. PLEASE COMPARE THE RESULTS OF CCOS STUDIES FROM DIFFERENT PARTIES.

A. Table 1 below shows a comparison of class rate of returns that are indicated by the COS studies of different parties.

Table 1. A Comparison of Class Rate of Returns

	TOTAL	Residential	SGS (Com, SH)	LGS (GP, TEB)	Special Contract	Large Power	Other (PF, FM, MS, Ltg)
OPC	4.89%	5.60%	6.73%	5.49%	-3.70%	-0.88%	4.65%
Staff	5.39%	6.27%	10.91%	5.76%	-0.55%	-1.08%	
Company	4.58%	2.23%	6.40%	10.44%	-2.45%	5.27%	3.38%
Praxair	4.64%	2.23%	6.63%	9.63%	34.33%	4.66%	4.16%

OPC's results appear on Schedule HH REB-1.1. Company's results appear on page 1, Schedule DWG-1, Section N, Schedule 1 of David Gibson's direct testimony. Praxair's results appear on Page 1, Schedule 5 of Maurice Brubaker's direct testimony. I have consolidated the more detailed rate class break downs used by the Company and Praxair into the 6 classes used by OPC. Staff did not provide class rate of return information in their filed testimony. I derived these returns from the workpapers provided by the Staff. Also, the Staff's SGS customer class is different from OPC's. Staff's SGS class includes Feed Mill

customers and Traffic Signal customers. However, since these two classes are very small, it does not greatly affect the comparison of the results.

From the table we can see that the largest discrepancies among parties are the results for the Special Contract and Large Power classes. For the Special Contract customer (Praxair), OPC, Staff and the Company's results are reasonably close to each other, while Praxair's result differs drastically from the others. For the Large Power classes, the Staff and OPC show a negative rate of return while the Company and the industrials show a rate of return of about 5%.

Q. WHAT CAUSED THE DIFFERENCES IN RESULTS OF DIFFERENT PARTIES' STUDIES?

A. I believe that the main factors that contribute to the differences between results of different parties' studies are the allocations of production and transmission plant. The Staff chose to update the time of use (TOU) allocators that they developed in case No. ER-87-81 for the production and transmission plant since the Staff believes that there has been no significant change to the shape of each class's hourly load curve. OPC believes that the TOU method is the most appropriate method in the allocation of production and transmission plant, and chose a 12NCP average and peak method since it is a reasonable proxy of the TOU allocators. The Company and Praxair chose to use an Average and Excess (A&E) method and Praxair adjusted this allocator so that no production and transmission cost would be allocated to 95% of its load requirements.

Q. WHY DOES PUBLIC COUNSEL BELIEVE THAT TOU ALLOCATORS, RATHER THAN THE AVERAGE AND EXCESS METHOD, ARE APPROPRIATE FOR ALLOCATING PRODUCTION AND TRANSMISSION PLANT?

A: In the past, utility analysts thought that production plant costs were driven only by system peak demands. Correspondingly, cost of service analysts used a single peak approach to allocate production costs. Over time it became apparent to some that hours other than the peak hour were critical from the system planner's perspective. Different electric production plant has different fixed costs and variable costs. For example, base load plants tend to be large and expensive-to-build machines that burn low cost fuels and while peaking units are generally inexpensive to build but have relatively high fuel costs. An electric utility needs to plan its production facilities to minimize the total system cost given the system load for the entire year.

A TOU methodology is fair because it allocates total system costs in accordance with the hour-by-hour usage made of the system by the different customer classes. In a TOU methodology, the production and transmission costs are allocated to the hours of the year that each resource is actually running. This kind of allocation methodology is equitable because every customer, large or small, residential or industrial, receives exactly the same cost allocation as every other customer taking service in any given hour. It is only the difference in the timing of each class's usage that results in differences in the costs allocated to the classes for the entire year. In previous electric cases, the Commission has accepted the TOU method as the most reasonable method for allocating the production costs of serving the various classes[1].

[1] See Report and Order on Case No. EO-85-17/EO-85-160, p. 148, for an example.

The A&E method also attempts to account for the annual energy supply needs of the company in addition to the capacity needs by dividing the total cost into two parts based on the system load factor and allocating the average usage portion based on average annual usage. However, by allocating demand-related cost based on excess demand instead of total demand, this method under-allocates costs to customers who use the system in a continuous manner and have little excess demand, and penalizes customers with low load factors and high excess demand. The resultant allocators from this method are generally similar to a single peak responsibility allocator, which ignores annual usage patterns, and the actual costs incurred by the utility to serve its annual load profile in a least cost manner.

Q. DOES PUBLIC COUNSEL BELIEVE THAT NO PRODUCTION AND TRANSMISSION COST SHOULD BE ALLOCATED TO 95% OF PRAXAIR'S LOAD?

A. No. Even though a customer may be almost fully interruptible, it still benefits from the existence of the production and transmission plant. It is only reasonable that it also pays a fair share of the production and transmission cost. According to information provided in the Company's witness David Gibson's testimony, Praxair's maximum non-coincident peak demand is 8084 kw and its coincident peak demand is 8409 kw. According to the Electric Utility Cost Allocation Manual published by the National Association of Regulatory Utility Commissioners, the A&E method allocates production plant cost to rate classes using factors that combine the classes' average demands and non-coincident peak demands. Praxair's adjustment on the Company's A&E allocators to use 300 kw instead of the 8084 kw non-coincident peak demand to represent Praxair's load results in an allocation of less than 5% of the share of these costs that it would be

allocated under the A&E method. Further, Praxair did not present any evidence in support of this adjustment about the frequency or duration of interruptions requested by the Company or Praxair's track record in responding to these requests. It is unreasonable that Praxair utilizes the system to satisfy a requirement of over 8000 kw at peak but only pays the production and transmission plant costs associated with a 300 kw load.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.

OPC CCOS Study Summary

03-May-01	TOTAL	Residential	SGS (Commercial & Small Heating)	LGS (Gen Power & TEB)	Special Contract (Praxair)	Large Power	Other (PFM, PF, Misc, & Ltg)
1 O & M EXPENSES	149,674,209	64,968,810	18,361,362	39,529,194	1,816,295	22,644,787	2,353,760
2 DEPREC. & AMORT. EXPENSE	18,457,957	8,199,394	3,808,577	3,900,407	99,752	1,625,965	823,863
3 TAXES	22,434,389	10,439,243	3,001,974	5,450,909	197,968	2,715,521	628,774
4							
5 TOTAL EXPENSES AND TAXES	190,566,555	83,848,333	25,242,010	49,021,390	2,120,483	27,070,674	3,814,737
6							
7 CURRENT RATE REVENUE	205,251,932	93,046,757	28,506,860	52,994,437	1,868,004	24,792,524	4,043,350
8 OFFSETTING REVENUES:	11,000,781	4,426,511	1,457,598	2,743,853	100,069	1,765,204	507,546
10							
11 TOTAL CURRENT REVENUE	216,252,713	97,473,268	29,964,458	55,738,290	1,968,073	26,557,728	4,550,896
12 CLASS % OF CURRENT REVENUE	100.00%	45.07%	13.86%	25.77%	0.91%	12.28%	2.10%
13							
14 OPERATING INCOME	25,135,085	13,624,935	4,722,447	6,716,900	(152,410)	(512,946)	736,159
15							
16 TOTAL RATE BASE	514,089,739	243,228,778	70,183,375	122,290,770	4,124,269	58,432,219	15,830,328
17							
18 IMPLICIT RATE OF RETURN	4.89%	5.60%	6.73%	5.49%	-3.70%	-0.88%	4.65%
19							
20 OPC RECOMMENDED RATE OF RETURN	8.88%	8.88%	8.88%	8.88%	8.88%	8.88%	8.88%
21							
22 REQUIRED OPERATING INCOME							
23 Equalized (OPC) Rates of Return	45,651,169	21,598,716	6,232,284	10,859,420	366,235	5,188,781	1,405,733
24							
25 TOTAL COST OF SERVICE	236,768,796	105,447,049	31,474,294	59,880,810	2,486,718	32,259,455	5,220,470
26 CLASS % of COS	100.00%	44.54%	13.29%	25.29%	1.05%	13.62%	2.20%
27							
28 Allocation of difference between							
29 current revenue and recommended revenue	20,516,083	9,137,017	2,727,257	5,188,689	215,475	2,795,291	452,355
30 MARGIN REVENUE REQUIRED							
31 to Equalize Class ROR - Revenue Neutral	216,252,713	96,310,032	28,747,038	54,692,121	2,271,243	29,464,164	4,768,115
32							
33 COS LESS OFFSETTING REVENUES	205,251,932	91,883,521	27,289,440	51,948,268	2,171,174	27,698,960	4,260,569
34							
35 COS INDICATED REVENUE NEUTRAL SHIFT	0	(1,163,236)	(1,217,420)	(1,046,169)	303,170	2,906,436	217,219
36 % REVENUE NEUTRAL RATE INCREASE	0.00%	-1.25%	-4.27%	-1.97%	16.23%	11.72%	5.37%
37 CLASS % OF REVENUE AFTER REVENUE SHIFT	100.00%	44.77%	13.30%	25.31%	1.06%	13.50%	2.08%

OPC Rate Design Summary

03-May-01	TOTAL	Residential	SGS (Commercial & Small Heating)	LGS (Gen Power & TEB)	Special Contract (Praxair)	Large Power	Other (PFM, PF, Misc, & Ltg)
1 COS INDICATED RATE REVENUE INCREASE	0	(1,163,236)	(1,217,420)	(1,046,169)	303,170	2,906,436	217,219
2 COS REQUIRED % RATE REVENUE INCREASE	0.00%	-1.25%	-4.27%	-1.97%	16.23%	11.72%	5.37%
3 CLASS % OF REVENUE AFTER REVENUE SHIFT	100.00%	44.77%	13.30%	25.31%	1.06%	13.50%	2.08%
4							
5 OPC RECOMMENDED REVENUE NEUTRAL SHIFT	0	(581,618)	(608,710)	(523,084)	151,585	1,453,218	108,609
6 OPC RECOMMENDED % RATE REVENUE INCREASE	0.00%	-0.63%	-2.14%	-0.99%	8.11%	5.86%	2.69%
7 CLASS % OF REVENUE RECOMMENDED BY OPC	100.00%	45.05%	13.59%	25.56%	0.98%	12.79%	2.02%
8							
9 SPREAD OF REVENUE DECREASE/INCREASE							
10 15.133316 Mil Increase	15,133,316	6,817,496	2,056,943	3,868,736	148,905	1,935,110	306,126
11 40 Mil Increase	40,000,000	18,019,833	5,436,860	10,225,746	393,583	5,114,835	809,144
12							
13 COMBINED IMPACT OF REVENUE INCREASE AND OPC REVENUE NEUTRAL SHIFT							
14 15.133316 Mil Increase	15,133,316	6,235,878	1,448,233	3,345,652	300,490	3,388,328	414,735
15 40 Mil Increase	40,000,000	17,438,215	4,828,150	9,702,661	545,168	6,568,053	917,753